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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,222	BARENBRUG ET AL.	
	Examiner	Art Unit	
	ABDERRAHIM MEROUAN	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/19/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1- 4, and 9 - 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Deering (U.S. PG-PUB 2002/0109701 A1) hereinafter referred as Deering.

3. As per claim 1 Deering discloses: Computer graphics processor (Deering, Abstract, lines 1-5) having a renderer for rendering in parallel a plurality views of 3D images, (Deering, Page 2. Paragraph [0019], lines 1-5 "*the frames intended for the right eye and left eye represent the frames intended for N views. ")* said renderer comprising:

a rasterizer configured to traverse a surface grid over a surface of a primitive of a 3D image primitives (Deering, Page 8, Paragraph[0110], lines 11-17 "*...filtering engine 106 may scan through virtual screen space in raster... (the filtering engine in this case is the rasterizer that scans(traverses) screen space (grid))* ") for all of the plurality different views of said 3D image

such that traversing is performed once for said 3D image (Deering, Page 4. Paragraph [0050], lines 1-7 *"...3D graphics data... (represent the N views of 3D object)"),*

a shader unit configured to determine_for determining a color of the output (Deering, Pages 4-5, Paragraph [0056], lines 1-13 *"rendering engine... compute color information..." In this case the rendering engine is the shader unit.")*, of the rasterizer and forward a shaded color sample along with its screen coordinates (Deering, Page 3. Paragraph [0027], lines 1-8 "*the positions are in a two-dimensional field which are the screen coordinates.*"),

a plurality of screen space resamplers, each of said screen space resamplers being configured to resample the shaded color sample determined by said shader unit (Deering, Page 4, Paragraph [0037], lines 1-3 "*the supersamples are generated by resamplers(filtering engine).*" *and*, Page 3, Paragraph [0027], lines 1-8).

a plurality different views such that resampling is performed plurality of times in parallel for said 3D image. (Deering, Page 2, Paragraph [0020], lines 1-12 "*The blur value determines how much blurring the sample is to experience in the filtration from samples to pixels applied by the filtering engine(how many times the resampling will happened).*")

4. Claim 9 is similar in scope to claim 1, therefore the reasons used to reject claim 1 are the same used to reject claim 9.

5. As per claim 2, Deering discloses: Computer graphics processor according to claim 1: a texture memory for storing texture maps, wherein said surface grid is derived from a texture map

being associated with said primitive and being stored in said texture memory (Deering, Page 2, Paragraph [0096], lines 1-13)

6. As per claim 3, Deering discloses: Computer graphics processor according to claim 2 wherein a grid associated to one of the texture maps stored in the texture memory is chosen as surface grid, (Deering, Page 2, Paragraph [0096], lines 1-13)
if three requirements are fulfilled, said three requirements including:
said texture map is addressed independently. (Deering, Page 7, Paragraph [0095], lines 1-7)
said texture map is based on a 2D texture, (Deering, Page 2, Paragraph [0096], lines 1-13 "*texture coordinates represent 2D texture*")
and the texture coordinates at the vertices do not make up a degenerate primitive. (Deering, Page 7, Paragraph [0100], lines 1-8*" rendering engine 102 may compute color intensity values for the interior sample positions of the candidate render pixel based on the vertex color values and also on the one or more texture values if texture processing step 216C was performed.(if the texture is performed the primitives are not degenerate primitives since the degenerate primitives were eliminated.)")*

7. As per claim 4, Deering discloses: Computer graphics processor according to claim 3. the texture map with the largest area in texture space is chosen if more than one texture maps stored in said texture memory fulfill said three requirements. (Deering, Page 2, Paragraph [0096], lines 1-13)

8. Claim 10 is similar in scope to claim 2, therefore the reasons used to reject claim 2 are the same used to reject claim 10.

9. Claim 11 is similar in scope to claim 3, therefore the reasons used to reject claim 3 are the same used to reject claim 11.

10. Claim 12 is similar in scope to claim 4, therefore the reasons used to reject claim 4 are the same used to reject claim 12.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 5 (1,2) is rejected under 35 U.S.C. 103(a) as being unpatentable over Deering (U.S. PG-PUB 2002/010971 A1) hereinafter referred as Deering, in view of Hayhurst (U.S. PGPUB 20010012018 A1) hereinafter referred as Hayhurst.

13. As per claim 5 (1,2), Deering discloses: Computer graphics processor according to claim 1 or 2.

Deering doesn't disclose: A mean for addressing a display screen,

said renderer having an input for a 3D model and an input for at least one viewpoint for rendering image information for supplying to the addressing means wherein the renderer further comprises an initial part having an input for the 3-D model and for at least one main view point for rendering objects in the form of at least one main view point Z-stack having stack layers with color information and Z-values the renderer further comprising a Z-stack constructor in which, from the at least one main view point Z-stack - generated by the initial stage, Z-stacks for additional viewpoints are constructed, and a further image information occlusion semantics stage for generating image information from the z-stacks . However, Hayhurst discloses:

A mean for addressing a display screen, (Hayhurst, Figure 1, Block 105)

said renderer having(Hayhurst Page 3 ,Paragraph [0026] , lines 15 to 16) an input for a 3D model (Hayhurst Figure 1, Block 106 and paragraph [0025] , line 12) and an input for at least one viewpoint for rendering image information for supplying to the addressing means(Hayhurst , Page 3, paragraph [0026] , lines 1- 2, and lines 15- 24)

wherein the renderer (Hayhurst , Page 3 ,Paragraph [0026] , lines 15 - 16) further comprises an initial part having an input for the 3-D model and for at least one main view point for rendering objects(Hayhurst Figure 1, Block 106 and paragraph [0025] , line 12) in the form of at least one main view point Z-stack having stack layers with color information and Z-values (Hayhurst, Page 1, Paragraph [0009], lines 5 -7 and Page 2 ,Paragraph [0010] , lines 8- 14)

the renderer further comprising(Hayhurst , Page 3 ,Paragraph [0026] , lines 15 -16)

a Z-stack constructor in which, from the at least one main view point Z-stack (Hayhurst Page 2 ,Paragraph [0011] , lines 2- 12) generated by the initial stage, Z-stacks for additional viewpoints are constructed, and a further image information occlusion semantics stage for generating image information from the z-stacks (Hayhurst Page 2 ,Paragraph [0012] , lines 2 -11)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the Z-stack constructor as taught by Hayhurst into Deering to add Z-stack constructor for generating image information from Z-stacks.

14. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deering (U.S. PG-PUB 2002/0109701 A1) hereinafter referred as Deering, in view of Hayhurst (U.S. PGPUB 20010012018 A1) hereinafter referred as Hayhurst, and further in view of Hanna et al. (U.S. Patent 6269175 B1) hereinafter referred as Hanna1.

15. As per claim 6, Deering in view of Hayhurst discloses: Computer graphics processor according to claim 5.

Deering in view of Hayhurst doesn't disclose: an object extracter for extraction of objects from a view point z- stack. However, Hanna discloses: an object extracter for extraction of objects from a view point z- stack. (Hanna1, Column 11, lines 25- 27)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention that adding an object extracter to the computer graphics processor as taught by Hanna1

into the process of the Deering in view of Hayhurst to provide an efficient view of 3D scenes on 3D display system.

16. As per claim 7, Deering in view of Hayhurst: Computer graphics processor according to claim 6

Deering in view of Hayhurst doesn't disclose: wherein the object extracter is arranged for extracting objects from the at least one main view point z-stack. However, Hanna1 discloses: wherein the object extracter is arranged for extracting objects from the at least one main view point z-stack. (Hanna1, Column 11, lines 25 - 27)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention the use of the object extractor as taught by Hanna1 into the process of the Deering in view of Hayhurst to describe the functionality of the object extractor from at least one main view point z-stack.

17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deering (U.S. PG-PUB 2002/010971 A1) hereinafter referred as Deering in view of Hayhurst (U.S. PGPUB 20010012018 A1) hereinafter referred as Hayhurst, and further in view of Hanna et al. (U.S. PGPUB 20010036307 A1) hereinafter referred as Hanna2.

18. As per claim 8, Deering in view of Hayhurst teaches: Computer graphics processor according to claim 5.

Deering in view of Hayhurst doesn't disclose: wherein the DOF rendering stage is arranged for DOF processing of the at least one main view point z-stack into a at least one main view point z-stack comprising DOF blurring. However, Hanna discloses: wherein the DOF rendering stage is arranged for DOF processing.(Hanna2, Page 1, Paragraph [0013], lines 3- 5) of the at least one main view point z-stack into a at least one main view point z-stack .(Hanna2, Page 1, Paragraph [0038], lines 3- 5)comprising DOF blurring.(Hanna2, Page 1, Paragraph [0013], lines 5 -6) Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention the use of the DOF rendering stage as taught by Hanna2 into the process of the Deering in view of Hayhurst for a high image resolution.

19. Claim 13 is rejected under 35 U.S.C.103(a) as being unpatentable over Deering (U.S. PG-PUB 2002/010971 A1) hereinafter referred as Deering in view of Hayhurst (U.S. PGPUB 20010012018 A1) hereinafter referred as Hayhurst.

20. As per claim 13, Deering discloses: Method of rendering N views of 3D images according to claim 11.

Deering doesn't discloses: further comprising the steps of: Supplying data and addressing means of a 3D display wherein for a main view point objects in the form of at least one main view point Z-stack comprising stack layers are rendered with RGB and Z-values

constructing from the at least one main view point Z-stack , z-stacks for additional viewpoints and generating from the Z-stacks for additional viewpoints by means of Z-tracing data to be supplied to the addressing means. However, Hayhurst discloses: Supplying data and addressing

means of a 3D display device (Hayhurst Figure 1; Page 3, paragraph [0026] , line 1, lines 23-25) wherein for a main view point objects in the form of at least one main view point Z-stack comprising stack layers are rendered with RGB and Z-values (Hayhurst Page 2 ,Paragraph [0010] , lines 8-14) constructing from the at least one main view point Z-stack , z-stacks for additional viewpoints, (Hayhurst Page 2 ,Paragraph [0011] , lines 2 -7) and generating from the Z-stacks for additional viewpoints by means of Z-tracing data to be supplied to the addressing means , (Hayhurst Page 2 ,Paragraph [0012] , lines 2 -11)

It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the teachings of Hayhurst into the process taught by Deering, because through such incorporation would provide an improved high speed access for accessing data

Response to Arguments

21. Applicant's arguments directed to claims 1-13 have been fully considered but they are not persuasive.

22. In response to applicant's argument for claim 1, applicant argues on page 7 that the prior art Deering does not disclose: "a rasterizer configured to traverse a surface grid over a surface of a primitive of a 3D image for all of the plurality of different views of said 3D image such that traversing is performed once for said 3D image." Examiner respectfully disagrees with the argument because Deering stated that:" *"...filtering engine 106 may scan through virtual*

screen space in raster fashion..."see Deering, Page 8, Paragraph[0110], and "...*The 3D graphics data may comprise a stream of graphics primitives..." see* Deering, Page 4, Paragraph[0050].
A raster fashion is a rasterization that is applied to a 3D image data the data could be a stream of many different view of the 3D image trought a computational pipeline to be rendered once." *The rendering engine may send primitives through a computational pipeline (or partition the primitives among a number of parallel pipelines) to render the primitives in terms of samples.*" Deering, Page2, Paragraph[0020].

23. In response to applicant's argument for claim 1, applicant argues on page 7 that the prior art Deering does not disclose:"a shader unit configured to determine a color of the output of the rasterizer and forward a shaded color sample along with its screen coordinates." Examiner respectfully disagrees with the argument because Deering stated that: " (Deering, Pages 4-5, Paragraph [0056], lines 1-13 *"rendering engine... compute color information..." In this case the rendering engine is the shader unit.")*, and (Deering, Page 3. Paragraph [0027], lines 1-8 "*the positions are in a two-dimensional field which are the screen coordinates.*").
Deering discloses a rasterization that receives or forward the stream of 3d image data from a shader. For example a rasterizer gets the output of a vertex shader and a pixel shader gets the output of the rasterizer. Deering discloses the rendering engine that includes shader unit , and rasterizer.

24. In response to applicant's argument for claim 1, applicant argues on page 8 that the prior art Deering does not disclose:" a plurality of screen space resamplers, each of said screen space resamplers being configured to resample the shaded color sample determined by said shader unit according to one of the plurality of different views such that resampling is performed a plurality of times in parallel for said 3D image." Examiner respectfully disagrees with the argument because Deering stated that: "*the supersamples are generated by resamplers (rendring engine and filtering engine).*" (Deering, Page 4, Paragraph [0037], lines 1-3 *and*, Page 3, Paragraph [0027], lines 1-8, and *"...filtering engine 106 may scan through virtual screen space in raster fashion..."see* Deering, Page 8, Paragraph[0110].

The filter engine resample the sample to get supersample

25. In response to applicant's argument for claim 9, the response used for claim are the same used for claim 9.

Conclusion

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on

the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDERRAHIM MEROUAN whose telephone number is (571)270-5254. The examiner can normally be reached on Monday to Friday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. M./

Examiner, Art Unit 2628

/Andrew Wang/

Supervisory Patent Examiner, Art Unit 2628